REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-2, 6-7, 11, 15, 19, 22 and 24-28 are presently active in this case. The present Amendment amends Claims 1, 19 and 25-28 without introducing any new matter. Claims 25-28 are amended to be consistent with the claims language of the other dependent claims.

The outstanding Office Action rejected Claims 1-2, 6, 11, 19, 22 and 24 under 35 U.S.C. §112, second paragraph, as indefinite. Claims 25-28 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Claims 1-2, 6-7, 11, 15, 19, 22 and 24-28 were rejected under 35 U.S.C. §103(a) as unpatentable over Minkler (U.S. Patent No. 3,560,178) in view of Harrill (U.S. Patent No. 3,844,497), Underwood (U.S. Patent No. 3,467,739) and Arterburn (U.S. Patent No. 5,935,289) and optionally in view of Fulk (U.S. Patent No. 3,847,579).

In response to the rejection under 35 U.S.C. §112, second paragraph, independent Claims 1 and 19 have been amended to make it abundantly clear that the yarn is made of filaments and that breakage of at least one of these filaments is detected "before breakage of the entire yarn." This change finds non-limiting support in the Specification as originally filed, for example, from page 7, line 30 to page 8, line 7.

Claims 1 and 19 as presented in the last response were further clear that the breaking of individual filaments formed into the yarn was to be detected before the breakage of all filaments of the yarn. Accordingly, the attempt to focus on a few words taken out of context from page 9, lines 24-25, was clearly without merit as the question under the second paragraph of 35 U.S.C. § 112 is how the artisan would interpret the claims upon reading the entire specification, not just the two lines noted in the outstanding Office Action. Moreover

the concept of an entire strand of yarn breaking is clearly set forth at page 9, line 26. When this teaching is considered with the entirety of page 9, lines 24-30, there can be no doubt that one of ordinary skill in the art would be aware of the subject matter encompassed by Claims 1 and 19 in terms of detecting partial breakage (i.e. of at least one filament making up the yarn) before complete failure (total yarn breakage).

In response to the rejection of Claims 25-28 under 35 U.S.C. §112, first paragraph, Applicant respectfully traverses the rejection. First, it is clear that support for Claims 25-28 was specifically noted in footnotes 3-5 at page 7 of the Amendment filed on June 30, 2005. In this regard, it is believed that Figures 1-2 together with the Specification as originally filed provide a written description to a person of ordinary skill in the art for the features of Claims 25-28. See Applicant's Specification as originally filed, for example from page 8, line 30 to page 9, line 15 and in both Figures 1 and 2. Figures 1-2 show the position of the wheel 1 in the absence and presence of filament breakings, as explained in the brief description of the drawings at page 8, lines 25-28. Regarding Claims 25 and 27, a person of ordinary skill in the art is provided with a written description by Figures 1 and 2, since it is clearly shown that the angle of the rotational axis of the wheel 1 changes from Figure 1 to Figure 2. Every wheel that rotates has a rotational axis. Additionally, the Specification states "the castor 1 and the shaft 4 pivots clockwise"[1] therefore the rotational axis of the wheel will change as a function of the tension provided by the strand 1.

Regarding Claims 26 and 28, a person of ordinary skill in the art is given a written description in Figure 1 since the wheel 1 is mounted to the end of the shaft 4 and it can also be seen that the wheel pivots relative to an end of a shaft. Applicant's Specification also states that "the castor [wheel] 1 is mounted so as to pivot on a shaft 4 which itself pivots with

[1] See Applicant's Specification at page 9, line 19.

respect to a spindle 5 located in a casting 6."[2] Additionally, Applicant's Figure 2 further provides a written description for the claimed features. See *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 19 USPQ2d 1111 (Fed. Circuit), stating that "drawings constitute an adequate description if they describe what is claimed and convey to those of skill in the art that the patentee actually invented what is claimed" and "[t]hat combination invention is what the [patent's] drawings show" and at MPEP §2163.06 stating that "information contained in any one of the specification, claims or ***drawings*** of the application as filed may be added to any other part of the application without introducing new matter" (emphasis added).

Applicant also respectfully submits that the present Application does not state joint inventors. The sole inventor is Bruno Gibello. Accordingly, it is not necessary to point out inventor and invention dates of each claim.

In response to the rejection of Claims 1-2, 6-7, 11, 15, 19, 22 and 24-29 under 35 U.S.C. §103(a), Applicant respectfully requests reconsideration of this rejection and traverses the rejection, as discussed next.

Briefly recapitulating, Applicant's invention, as recited in Claim 1, relates to a process for manufacturing a continuous yarn, the process including: drawing a multiplicity of streams of molten material to form a multiplicity of continuous filaments; gathering the multiplicity of the filaments into the yarn with a wheel; and monitoring a position of the wheel to determine whether a tension exerted by the multiplicity of the filaments falls below a predetermined tension to detect breakage of at least one filament before breakage of the entire yarn. Independent Claim 19 recites similar features in the context of a method of determining breakage of at least one filament of a yarn.

As explained in the Specification, from page 5, line 23 to page 6, line 27, Applicant's Claim 1 improves upon background processes for manufacturing continuous yarns, since it

[2] See Applicant's Specification from page 8, line 30 to page 9, line 1.

can detect the breakage of the first filaments of the yarn as soon as possible and subsequently can take measures to avoid different problems in the manufacturing process.

To facilitate the understanding of the Applicants' invention, the present invention, as disclosed in the Specification is next explained. A first problem that may arise is due to the lubricants covering the filaments. The filaments are covered with a lubricant that is very sticky. Therefore, a broken filament of the entire yarn can stick to anything that it gets in contact with, since it may not be guided through the manufacturing process anymore. Subsequently, the wheel and any other rotating or moving mechanical part of the process could be damaged or other filaments could tear. Another problem that may arise is due to the melting of the broken filaments. Torn filaments may melt and drops of glass or thermoplastic can drop onto the manufacturing equipment and cause fire. It is also possible that the drops damage the manufacturing equipment by covering surfaces of rotation wheels.

Turning now to the applied references, Minkler discloses an apparatus for producing fiber glass where filaments are gathered into a strand, where upon ***break-out of the strand***, a switch is opened and the electric circuit which supplies current to the winder motor is interrupted.[3] The outstanding Office Action states that Minkler discloses the invention as discussed in the previous Office Action.[4] Applicant respectfully disagrees. Minkler does not only fail to teach or suggest that a breakage of at least one filament is detected before breakage of the entire yarn, but also fails to teach or suggest Applicant's claimed monitoring of a position of the wheel to determine whether a tension exerted by the multiplicity of the filaments falls below a predetermined tension. First, Minkler clearly teaches that "upon breakage of the fibers and when no fibers contact the shoe 16, the counterweight 62 causes the arm 38 to pivot to its FIG. 3 position."[5] Accordingly, Minkler does not teach a step of

[3] See Minkler at column 1, lines 50-56 and in corresponding Figure 2.
[4] See the outstanding Office Action at page 4, lines 11-13.
[5] See Minkler at column 2, lines 66-69 and in corresponding Figures 2 and 3.

monitoring a position of the wheel whether a tension exerted by filaments falls below a predetermined value. The shoe 16 merely displaces itself laterally after Minker's entire strand is torn. Accordingly, when Minkler's shoe 16 displaces itself, there is no tension at all caused by the strand. Second, Minkler discloses that upon break-out of the strand, a mercury switch is opened.[6] Therefore Minkler fails to teach or suggest the detecting of breakage of at least one filament before breakage of the entire yarn strand, as claimed by Applicant. As disclosed in several positions throughout the reference Minkler and also shown in Figures 2-3, Minkler detects if the strand is entirely torn. Otherwise, Minkler's shoe 16 cannot displace itself. Minker even teaches that the electrical circuit for driving the shoe can only be closed "only when the strand contacts the shoe."[7] Accordingly, Minkler teaches away from Applicant's invention.

The reference Fulk used by the outstanding Office Action as an additional reference to form the 35 U.S.C. §103(a) rejection does also not disclose the above-noted features that Minkler fails to disclose. Fulk discloses a method and apparatus for controlling the tension of linear materials between material feeding and collecting.[8] Fulk's apparatus thereby provides a predetermined tension between the delivering and collecting means, with the biasing force of a spring 58 and a damping mechanism 200.[9] Further, Fulk controls the rotational speed of the collet 80, as shown in Figure 5

Accordingly, Fulk fails to teach or suggest the detection of a breakage of at least one filament before breakage of the entire yarn. Controlling a rotational speed, as taught by Fulk, ***is not*** detecting any breakage of all or part of any yarn. Fulk also fails to teach or suggest the Claim 1 monitoring of a position of the wheel to determine whether a tension exerted by the multiplicity of the filaments falls below a predetermined tension or the similar wheel

[6] See Minkler in the Abstract.
[7] See Minkler at column 1, lines 63-69.
[8] See Fulk in the Abstract.
[9] See Fulk at column 6, lines 43-53 and in Figures 1 and 6-8.

movement monitoring to determine filament breakage before breakage of the entire yarn strand as in Claim 19. Fulk has ***no means to measure a tension*** of the filaments. Fulk has merely a passive mechanical system for damping and providing a tension by the means of a spring 58 and a damper 200 with an arm 56.[10] Therefore, a mechanical system to provide a predetermined tension to a strand, as disclosed by Fulk, ***is not*** a monitoring of a position of the wheel or its movement to determine whether a tension exerted by the multiplicity of the filaments falls below a predetermined tension, as claimed in Claim 1 or Claim 19.

Further, Harrill fails to remedy the deficiencies of Minkler or Fulk, because it also does not teach or suggest the features of Applicant's independent Claims 1 and 19, as mentioned above. Harrill discloses a system for stopping a collet in a spiral glass filament winding machine, in the event of strand breakage.[11] Harrill also fails to teach or suggest Applicant's claimed monitoring of a position of the wheel or wheel movement to determine whether a tension *exerted by the multiplicity of the filaments falls below a predetermined tension*, also fails to teach or suggest that a breakage of at least one filament is detected before breakage of the entire yarn strand.

While Harrill teaches detecting the breakage of a number of filaments, rather than the breakage of the entire strand,[12] other breakage detection is by detecting an airflow other than the one generated by the filament motion, because an airflow in the proximity of the moving filament will change, if the strand breaks. The airflow can move a baffle that serves to operate a micro-switch that can shut down the winders.[13] Therefore, the detecting of an airflow by a baffle to the detect the breakage of a strand, as disclosed by Harrill, is not ***monitoring of a position of the wheel*** or the movement of the wheel to determine whether a

[10] See Fulk at column 9, lines 37-50, and in corresponding Figure 5-8.
[11] See Harrill in the Abstract.
[12] See Harrill at column 7, lines 44-47.
[13] See Harrill at column 2, lines 3-26 and in corresponding Figure 2.

tension exerted by the multiplicity of the filaments falls below a predetermined tension, as claimed.

The reference Underwood used by the outstanding Office Action also fails to remedy the deficiencies of Minkler, Fulk and Harrill. Underwood discloses a method and apparatus for exercising control of material processing units to deliver material onto a moving conveyor, wherein the rate of movement of the conveyor can be modified if the material processing units fail to deliver material.[14] Underwood further teaches that the load of an induction motor driving a pull wheel will change, if there is a partial or complete strand breakout, and that the phase angle of the motor's supplying current changes.[15] This phase angle change of the current is measured by a circuit.[16] Accordingly ***measuring a phase angle*** change of an induction motor to detect strand breakout, as described in Underwood, is not ***monitoring of a position of the wheel*** to determine whether a tension exerted by the multiplicity of the filaments falls below a predetermined tension, as claimed.

The reference Arterburn used by the outstanding Office Action to form the 35 U.S.C. §103(a) rejection is also silent on all the features of Applicant's independent claims, as explained above. Arterburn discloses an apparatus for automatic fiber manufacturing, and is concerned with the process restarting the fiberizing machines after the fibers are broken, since this is usually a labor intensive process.[17] Arterburn merely states that "when one fiber breaks it is only a matter of few minutes until the entire bushing is broken out and generating scrap primary fibers."[18] Therefore, Arterburn merely describes a part of the problem that Applicant's invention is trying to solve. Arterburn's invention is only effective once the entire bushing is broken out. Arterburn ***does not teach or suggest*** that once one fiber breaks,

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[14] See Underwood in the Abtract.
[15] See Underwood at column 8, lines 3-8.
[16] See Underwood at column 8, lines 8-30 and in corresponding Figure 9.
[17] See Arterburn in the Abstract.
[18] See Arterburn at column 1, lines 54-58.

the entire strand will tear subsequently. He merely states that the entire bushing is broken out.

Therefore, all the applied references fail to teach or suggest every feature recited in Applicant's claims, so that Claims 1-2, 6, 11, 19, 22 and 24-28 are believed to be patentably distinct over the applied references. Further, Applicant believes that the combination of these references is not proper, since any combination would require a complete redesign of Minkler's system detecting breakage of the entire yarn to arrive at Applicant's invention. Accordingly, Applicant respectfully traverses, and requests reconsideration of, the rejection based on Minkler, Harrill, Underwood, Arterburn and Fulk.[19]

Further, Applicant respectfully submits that none of the references Minkler, Fulk Harrill, Underwood and Arterburn teaches all the features of Applicant's dependent claims. Specifically, dependent Claims 25 and 27 recite that the position of a wheel or the movement of a wheel includes an angular displacement of a rotating axis of the wheel. However, in Minkler, the displacement of the Minkler's shoe 16 is a simple lateral translation of the rotational axis.[20]

In Fulk, the means for providing a predetermined tension to the fibers includes an arm 56 and a wheel 54, wherein the position of the wheel can change when the arm 56 moves vertically as a lever.[21] However, the rotational axis of wheel 54 never changes its angle. Accordingly, Fulk fails to teach or suggest that position of a wheel or the movement of a wheel includes an angular displacement of a rotating axis of the wheel, as claimed in dependent Claims 25 and 27.

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[19] See MPEP 2131: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference," (Citations omitted) (emphasis added). See also MPEP 2143.03: "All words in a claim must be considered in judging the patentability of that claim against the prior art."

[20] See Minkler in Figures 2 and 3.

[21] See Fulk in Figure 7.

The present Amendment is submitted in accordance with the provisions of 37 C.F.R. §1.116, which after Final Rejection permits entry of amendments placing the claims in better form for consideration on appeal. As the present Amendment only amends Claims 25-28 to better conform to the other dependent claims and the amendment to Claims 1 and 19 is believed to overcome the outstanding rejection under 35 U.S.C. §112, second paragraph, the present Amendment places the application in better form for consideration on appeal and should be entered. In addition, the present Amendment is not believed to raise new issues because the changes to Claims 1 and 19 are supported by the specification as originally filed and were clearly interpreted as including the presently added limitation. It is therefore respectfully requested that 37 C.F.R. §1.116 be liberally construed, and that the present Amendment be entered.

Consequently, in view of the present Amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1-2, 6-7, 11, 15, 19, 22 and 24-28 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicant's undersigned representative at the below listed telephone number.

Respectfully submitted,

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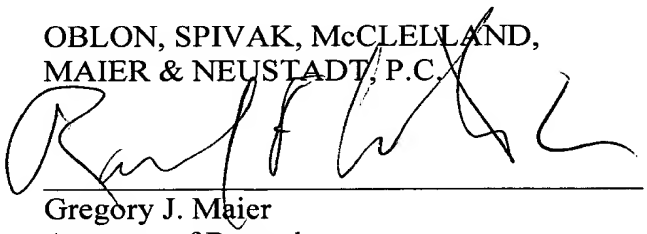

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